

P66 THROTTLE LOOP PRESENTATION

I. INTRODUCTION - Larson

A. Historical Notes

B. Outline of Presentation

II. STUDY OF THROTTLE EXCITATION SOURCES - Klumpp

A. Description of IMUBOB

B. Discovery of error in summation of engine time constant

C. Comparison of Apollo 12 data with digital simulation results  
using corrected engine time constant

### III. STABILITY STUDY

A. Description of System - Kalan

B. Description of How System was Designed to Operate - Kalan

C. Cause of Marginal Stability in Apollo 11 & Apollo 12 - Kalan

D. Optimization of TTN, LAG, and TROD

1) Z Transform Predictions using Simplified Model - Kalan

2) Simulation Results - Klumpp

E. Sensitivity Study for Optimized System.

1) Z transform Predictions for Errors in LAG, THRUST/BIT, and

Changes in Engine Time Constant - Kalan

2) Simulation Results for Large Throttle Changes - Klumpp

F. Selected Results using more Advanced Z Transform Model - Klumpp

G. Summary - Klumpp